Electronic Version

Stylesheet Version v1.1.1

Claims

[c1] 1. A generator coil comprising:
a plurality of stacked windings in a rotor where individual turns are stacked in parallel sided radial slots in the rotor, each successive turn having the same width, wherein a first turn has a first thickness and a second turn has a second thickness thicker than said first thickness, said second turn employed in regions of high temperature thereby reducing the temperature thereof.

[c2] 2.The generator coil of claim 1, wherein said second turn is employed in at least one of a region of high temperature and top turns of the rotor.

[c3] 3.The generator coil of claim 1, wherein each turn comprises an axial length of copper having a generally rectangular cross-sectional shape.

[c4] 4. The generator coil of claim 1, wherein said each slot contains layers of said individual turns comprising copper turns separated by layers of turn insulation.

[c5] 5.The generator coil of claim 4, wherein said layers of turn insulation disposed between said first and second turns have substantially the same thickness.

[c6] 6.The generator coil of claim 1, wherein a net turn thickness and number of turns are identical to that if a constant turn thickness was employed in said each slot of identical geometry.

[c7] 7.The generator coil of claim 1, wherein at least two different turn thicknesses are employed.

[c8] 8.The generator coil of claim 1, wherein a hot spot temperature corresponding to said region of higher temperature is reduced by about 7 °C from that of using constant turn thickness when a two turn thickness is employed in a corresponding parallel sided slot having eleven turns.

[c9] 9.A dynamoelectric machine comprising:
a rotor having a plurality of slots;
a plurality of copper turns each having a same width and stacked in each slot of said plurality of slots, wherein a first copper turn of said plurality of copper turns has a first thickness and a second copper turn of said plurality of copper turns has a second thickness thicker than said first thickness, said second copper turn is employed in regions of high temperature thereby reducing the temperature.

[c10] 10.The dynamoelectric machine of claim 9, wherein each

slot of said plurality of slots is configured as a parallel sided slot.

[c11] 11.The dynamoelectric machine of claim 9, wherein said first and second copper turns comprises an axial length of copper having a generally rectangular cross-sectional shape.

[c12] 12.The dynamoelectric machine of claim 9, wherein said second copper turn is employed in at least one of a region of high temperature and top turns of the rotor.

[c13] 13. The dynamoelectric machine of claim 9, wherein said each slot contains layers of copper turns separated by layers of turn insulation.

[c14] 14.The dynamoelectric machine of claim 13, wherein said layers of turn insulation disposed between said first and second copper turns have substantially the same thickness.

[c15] 15.The dynamoelectric machine of claim 9, wherein a net turn thickness and number of turns are identical to that if a constant turn thickness was employed in slots of identical geometry.

[c16] 16.The dynamoelectric machine of claim 9, wherein at least two different turn thicknesses are employed.

[c17] 17.The dynamoelectric machine of claim 9, wherein a hot spot temperature corresponding to said region of higher temperature is reduced by about 7° C from that of using constant turn thickness when a two turn thickness is employed in a corresponding parallel sided slot having eleven turns.

[c18] 18.A method to reduce field winding temperatures for windings in a rotor, the method comprising:
varying turn thickness of individual turns with at least two different thickness turns stacked in a parallel sided slot of the rotor;
employing thicker individual turns in a region corresponding to a field hot spot to reduce resistance and local heat generation thereof.

[c19] 19.The method of claim 18, wherein said each individual turn comprises an axial length of copper having a generally rectangular cross-sectional shape.

[c20] 20.The method of claim 18, wherein a net turn thickness and number of turns are identical to that if a constant turn thickness is employed in slots of identical geometry.

[c21] 21.The method of claim 18, wherein layers of turn insulation disposed between said individual turns have substantially the same thickness.

[c22] 22.The method of claim 18 further comprising: employing thinner individual turns than said thicker individual turns in a region corresponding to a non-critical region.